COMPREHENSIVE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN

VOLUME I

FERNALD CLOSURE PROJECT
FERNALD, OHIO

DRAFT, JULY 2004

U.S. DEPARTMENT OF ENERGY

VOLUME I

LEGACY MANAGEMENT PLAN

TABLE OF CONTENTS
VOLUME 1
LEGACY MANAGEMENT PLAN

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

AEC	Atomic Energy Commission
AWWT	Advanced Waste Water Treatment
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CAWWT	Converted Advanced Waste Water Treatment
DOE	Department of Energy
EM	Environmental Management
EPA	Environmental Protection Agency
FCAB	Fernald Citizens Advisory Board
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
FIU	Florida International University
FMPC	Feed Materials Production Center
FRESH	Fernald Residents for Environmental Safety and Health
FRL	final remediation level
GMA	Great Miami Aquifer
GWLMP	Groundwater/Leak Detection & Leachate Monitoring Plan
IC	Institutional Control
ICP	Institutional Controls Plan
IEMP	Integrated Environmental Monitoring Plan
LCS	leachate collection system
LDS	leak detection system
LMICP	Comprehensive Legacy Management and Institutional Controls Plan
MUEF	Multi-Use Educational Facility
NDAA	National Defense Authorization Act
NRRP	Natural Resources Restoration Plan
OSDF	on-site disposal facility
OU	operable unit
PCCIP	Post Closure Care and Inspection Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SEP	Sitewide Excavation Plan
SSOD	storm sewer outfall ditch
U.S.	United States
WAC	waste acceptance criteria

1.0 INTRODUCTION

Legacy management is required at the Fernald Closure Project (FCP) to ensure that the remedial actions implemented at the site continue to be effective and protective of human health and the environment following closure. This Comprehensive Legacy Management and Institutional Controls Plan (LMICP) outlines the Department of Energy's (DOE) approach to long-term care of the FCP. The purpose of the LMICP is to document the planning process and the requirements for long-term care of the FCP. It is DOE's intent to continue to refine the LMICP with the involvement of stakeholders and regulators to ensure that legacy management activities are appropriately planned to meet regulatory and stakeholder requirements. The term "legacy management" is used throughout this LMICP and is intended to encompass all activities, formerly referred to as "stewardship" activities, as defined in DOE policy and guidance.

DOE created the Office of Legacy Management to effectively manage the human and environmental liabilities of remediated sites. The Office of Legacy Management includes the Office of Policy and Site Transition (LM-40) to coordinate the transitions and the Office of Land Management (LM-50) to provide long-term care of the facilities. Site Transition Teams lead by LM-40 managers are comprised of staff from other Office of Legacy Management offices (LM-5, 10, 20, 30 and 50) to execute the transition activities. The teams actively work with the site EM staff to coordinate scope and schedule.

DOE policy and guidance clearly identify protectiveness of the remedies carried out at the FCP (e.g., groundwater, on-site disposal facility, institutional controls) as the top priorities for legacy management. Specifically, the on-site disposal facility (OSDF) will require regular monitoring and maintenance to ensure its integrity and performance. The restored areas of the site will also require monitoring to ensure applicable laws and regulations are followed. Departmental policy and funding priorities regarding legacy management emphasize supporting the remedies as described in Fernald's Records of Decision (ROD).

1.1 Purpose and Organization of this Legacy Management and Institutional Controls Plan

Developing the LMICP now, prior to the completion of remediation, allows for more stakeholder involvement and will ensure a more efficient transition to legacy management. It is also necessary so that baseline scope, schedule and projected costs can be developed and planned for in future legacy management budget allocations. In addition, the personnel most knowledgeable about the site remediation process are readily available as resources for the transition to legacy management. The LMICP also provides an overview of the defined end-state, maintenance and monitoring requirements, as well as contingencies that are in place to address any changes made to the end state.

The Fernald LMICP has been developed as a two-volume set. This first volume is the Legacy Management Plan. The Legacy Management Plan outlines DOE's overall approach to legacy management, including such issues as stakeholder involvement, information management and funding.

The second volume, the Institutional Controls (IC) Plan, outlines the specific surveillance and maintenance requirements for Fernald. There are three support plans attached to the LMICP: the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project (OMMP, DOE 2004, Attachment A); the OSDF Post Closure Care and Inspection Plan (PCCIP, DOE 2004, Attachment B); and the Groundwater/Leak Detection and Leachate Monitoring Plan (GWLMP, DOE 2004, Attachment C). These support plans outline the operational requirements associated with the ongoing groundwater remedy, surveillance and maintenance requirements for the OSDF, and leachate and groundwater. The IC Plan (i.e., Volume 2) is an enforceable document with U.S. EPA, as are the three support plans.

Under existing federal requirements (see Section 1.2), DOE is required to conduct legacy management activities at facilities that have achieved completion of site remediation. Existing laws, regulations, policies and directives provide broad requirements for DOE to conduct legacy management activities. These activities include monitoring, reporting, record keeping, and long-term surveillance and maintenance for various facilities and media, including engineered waste disposal units, and surface and groundwater.

Although regulations are in place, they do not necessarily include all legacy management activities that may be required at the FCP and other DOE facilities. Specific requirements for monitoring and maintenance of engineered waste disposal units (such as the OSDF) are contained in DOE orders and policies.

Taking into consideration the current future use plans for the site, the scope of legacy management activities at the FCP falls into two categories: 1) operation and maintenance of the remedy and 2) surveillance and maintenance in restored areas (areas outside of the OSDF). Legacy management activities related to the maintenance of the remedies will include monitoring and maintenance of the OSDF and ensuring that remedy-driven restrictions on access and use of the FCP are enforced. Surveillance and maintenance in restored areas will focus on protecting natural and cultural resources in accordance with applicable laws and regulations.

This LMICP will be revised and updated with stakeholder and regulator involvement to further refine legacy management planning at the FCP. The LMICP will be finalized prior to site closure by the Office of Legacy Management and will govern long-term surveillance and maintenance of Fernald (i.e., it will function as the Long-Term Surveillance and Maintenance Plan).

The Legacy Management Plan (Volume 1) is organized into the following sections to describe planned legacy management activities at the FCP, as well as issues related to stewardship.

1.0 Introduction – provides an introduction to this Plan and discusses the purpose and necessity of legacy management at DOE facilities.

2.0 Site Background - provides a background and history of the FCP beginning with construction of the site in the 1950's. There is a discussion of the production activities, the FCP's remediation, and the anticipated conditions at the time of site closure.

3.0 Scope of Legacy Management at the FCP – discusses the scope of legacy management at the FCP, including management of site property and cultural resources.

4.0 Oversight of Legacy Management at Fernald – describes the breakdown of responsibilities of legacy management activities at the FCP, including the Office of Legacy Management, contractor, regulators, the reporting requirements and the CERCLA five-year review.

5.0 Public Participation - describes the role the public will play in the legacy management of the FCP. Also included is a description of the effect of legacy management activities on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Five - Year Review.

6.0 Information Management – describes the importance of record and information management, preservation, and its applicability to legacy management. Also describes various avenues for record management during legacy management.

7.0 Funding – discusses the funding needs to implement and sustain a legacy management program at the FCP.

1.2 Purpose of Legacy Management

In recent years, DOE has increased focus on the need for legacy management following completion of remediation activities. DOE orders and policies that provide the framework for legacy management include the documents listed below (DOE 1999a). The term "stewardship" is used in the following descriptions and summaries. At the time of the preparation of these documents, the term "stewardship" was used instead of "legacy management". As stated above, both terms are used in this Legacy Management Plan and refer to the same process.

- **DOE Order 450.1 Environmental Protection Program** requires the implementation of sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by DOE operations.

- **DOE Order 200.1 Information Management Program** provides a framework for managing information, information resources, and information technology investment.

- **DOE Order 430.1 A Life Cycle Asset Management and DOE Order 4320.1B Site Development Planning** identify what analyses must be conducted in order to determine whether a particular portion of DOE real property is considered to be excess and available for transfer to another entity.

- **DOE Order 435.1 Radioactive Waste Management** requires DOE radioactive waste management activities to be systematically planned, documented, executed, and evaluated in a manner that protects worker and public safety, as well as the environment.

- **DOE Order 1230.2 DOE American Indian Tribal Government Policy** requires DOE sites to consult with potentially affected Tribes concerning impacts of proposed DOE actions (including real property transfers), and to avoid unnecessary interference with traditional religious practices.

- **DOE Order 5400.5 Radiation Protection of the Public and the Environment** establishes acceptable levels for the release of property on which any radioactive substances or residual radioactive material was present.

- **The Secretary of Energy's Land and Facility Use Policy, issued December 21, 1994, and DOE Policy 430.1, also titled "Land and Facility Use Planning Policy," issued July 9, 1996,** state that DOE sites must consider how best to use DOE land and facilities to support critical missions and to stimulate the economy while preserving natural resources, diverse ecosystems, and cultural resources.

Other documents and reports have been written that address legacy management issues across the DOE complex and help to better define the activities that may be required for legacy management purposes. These documents include those listed below. As mentioned before, the term "stewardship", instead of "legacy management", is used in the descriptions and summaries.

- *From Cleanup to Stewardship* (DOE 1999a) addresses the nature of long-term stewardship at DOE sites, anticipated long-term stewardship at DOE sites, and planning for long-term stewardship.

- *A Report to Congress on Long-Term Stewardship* (DOE 2001) (required by the FY 2000 National Defense Authorization Act (NDAA)) represents the most comprehensive compilation of DOE's anticipated long-term stewardship obligations to date and provides summary information for site-specific, long-term stewardship scope, cost, and schedule. The report provides a "snapshot" of DOE's current understanding of stewardship activities and highlights areas where significant uncertainties still remain.

- *Managing Data for Long-Term Stewardship* (ICF 1998) represents a preliminary assessment of how successfully information about the hazards that remain at DOE sites will be preserved and made accessible for the duration of long-term stewardship.

- *Long-Term Stewardship Study* (DOE 2000a) describes and analyzes several significant national or crosscutting issues associated with long-term stewardship and, where possible, options for addressing these issues. The principal purposes are to promote information exchange and to provide information on the decision-making processes at the national level and at individual sites.

- *The Long-Term Control of Property: Overview of Requirements in Orders DOE 5400.1 and DOE 5400.5* (DOE 1999b) summarizes DOE requirements for radiation protection of the public and environment, with the intent of assisting DOE elements in planning and implementing programs for the long-term control (stewardship) of property.

- *Memorandum – Long-Term Stewardship "Guiding Principles"* (DOE 2000b) incorporates broad concepts pertaining to stewardship and incorporates elements identified by Ohio stakeholders as critical to the success of stewardship planning.

- *Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities* (DOE 2000c) provides DOE environmental restoration project managers with the information on institutional controls they will need when making environmental restoration remedy decisions under CERCLA and RCRA.

- *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups* (USEPA 2000) provides an overview of the types of institutional controls that are commonly available, including their relative strengths and weaknesses. It also provides a discussion of the key factors to consider when evaluating and selecting institutional controls in Superfund and RCRA corrective Action cleanups.

Most of the DOE sites that are in the cleanup phases are currently planning their legacy management activities. There are, however, a few facilities at which legacy management has been initiated. The applicable laws and regulations provide a foundation for legacy management practices, but each site is different. Each facility will have to work in conjunction with those laws and regulations, using them as guidelines, to develop legacy management plans that best suit that facility. Part of the legacy management planning at Fernald included a study conducted by Florida International University (FIU) that resulted in the creation of a database of laws, regulations, orders, etc. on the federal and state level that pertain to legacy management. The database includes the titles and a summary of the requirements, including a discussion of their applicability to the FCP. A

summary report has been generated that describes the project and the development of the database (FIU 2002a).

DOE guidance identifies why we need to address legacy management while remediation is still ongoing (DOE 1999a):

- To provide for a smooth transition from cleanup to legacy management;
- To emphasize that the "cleanup" goal in many cases is to reduce and control, not eliminate, risk and cost;
- To ensure that Congress, regulators and stakeholders have a clear understanding of the cleanup mission and to clarify that there is an endpoint;
- To set realistic expectations and show interim successes and results;
- To identify technology research and development needs; and
- To assure regulators and the public that DOE will not walk away from its post-remediation obligations.

DOE defines stewardship as "all activities required to protect human health and the environment from hazards remaining after remediation is completed (DOE 1999a)." Three categories, or levels, of stewardship are recognized: active, passive, and no stewardship required. Active stewardship is defined as "the direct performance of continuous or periodic custodial activities such as controlling access to the site; preventing releases from a site; performing maintenance operations; or monitoring performance parameters". Passive stewardship is defined as "the long-term responsibility to convey information warning about the hazards at a site or limiting access to, or use of, a site through physical or legal mechanisms". No stewardship is required "where cleanup has been completed to levels that will allow for unrestricted or residential future use" (DOE 1999a). The FCP will have a combination of "active" and "passive" measures during stewardship of the site. This Plan describes both "active" and "passive" stewardship measures, ranging from regular monitoring and maintenance to real estate restrictions and postings.

The input of the public and regulators throughout the legacy management process and providing access to site information during legacy management are also fundamental components of the long-term care of the FCP. Public involvement and access to information during legacy management are emphasized in all DOE policy and guidance and this Legacy Management Plan is intended to clearly outline DOE's commitment to those aspects of legacy management.

1.3 Approach to Legacy Management at Fernald

At many sites, including the FCP, completing remediation to levels acceptable for unrestricted use is not feasible, outside of the groundwater remedy. As a result, legacy management is necessary to ensure that all remedial efforts continue to be effective and protective of human health and

the environment. As part of cleanup of many DOE sites, disposal facilities are constructed to contain waste materials that will remain on DOE property. These facilities must be monitored and maintained to ensure their integrity and public safety.

1.3.1 Legacy Management Office Responsibilities

The DOE Office of Environmental Management is responsible for the remediation of the FCP. Post-remediation responsibilities will transition to the Office of Legacy Management. The Office of Legacy Management will be responsible for oversight of the FCP during legacy management. They will ensure that all legacy management activities are conducted as required. They will be the decision making body regarding changes in inspections and monitoring, any engineering changes required, any changes in access or public use, etc.

1.3.2 Use of Subcontracts

Operation and maintenance tasks may be carried out by subcontractor services. Minor repair work may be performed by labor supporting the ongoing aquifer remedy. Examples include minor repairs to fencing, gates, signs or components of the groundwater infrastructure. Repairs that require earthwork, erosion control, seeding, mowing, clearing, herbicide application or repair to pumps and piping will be completed by subcontractor services.

Goods and services will be procured in accordance with DOE-approved procurement policies and procedures. These procedures are in accordance with best commercial practices and are in compliance with requirements and intent of the Federal Acquisition Regulations and the Department of Energy Acquisition Regulations. The terms and conditions in subcontracts incorporate required flow-down clauses from the prime contract.

As requirements are identified by technical leads, a scope of work will be developed and a solicitation package will be initiated. The package will generally include statements of work, health and safety requirements, estimated costs, and required approvals. In cases where there are similar existing subcontracts, the existing work scope may be used as a framework for a new subcontract. New subcontracts may be developed through a competitive bid process or through negotiation of a sole-source procurement. Determination of the type of procurement will be made by analyzing the unique nature of the work scope, the critical nature of the services, and the importance of historical information known only by the previous contractor. Although the Office of Legacy Management intends to maximize the use of new subcontracts for most services, there may be a need to request assignment of an existing subcontract in unique circumstances to ensure continuation of a service.

1.3.3 Regulatory Oversight

The regulators will ensure that DOE is performing the required legacy management operations and maintenance activities at the FCP, as agreed upon by DOE and U.S. EPA in the LMICP. The Office of Legacy Management will be required to implement the requirements of the IC Plan subject to enforcement by the U.S. EPA. It is envisioned that both U.S. EPA and Ohio EPA will play an active role in oversight of legacy management at the FCP.

1.3.4 Reporting to Stakeholders

Currently, an annual report is submitted to the stakeholders, which discusses the progress of remediation efforts. Although not specifically defined, it is anticipated that a smaller form of annual reporting to the stakeholders will continue beyond closure and during legacy management. More detail on reporting is provided in Section 4.4 of this legacy management Plan and Section 5.3 of the IC Plan.

1.3.5 Inspections per Institutional Control Plan Requirements

Site inspections include inspections of the OSDF cap, leachate and leak detection system, and perimeter areas of the site. Inspections can be scheduled and unscheduled as the need arises. These inspections are further defined in the IC Plan (Volume 2).

1.3.6 Increase Monitoring if Necessary or As Needed

Office of Legacy Management has the option of increasing monitoring at any time, as needed. However, any proposed decrease in the frequency of monitoring activities will require approval by U.S. EPA.

1.4 DOE Management of the Legacy Management Program

The mission of the DOE legacy management Program includes providing sustained human and environmental protection through the mitigation of residual risks and the protection of natural and cultural resources at DOE facilities. The Office of Legacy Management at DOE Headquarters provides overall departmental policy, direction and program guidance on matters affecting legacy management.

The DOE-FCP will work closely with the appropriate Field Office and the Office of Legacy Management to determine what is required for the close-out of facility activities and the implementation of legacy management. The DOE-FCP Office is already fully engaged with the DOE Ohio Field Office and the Office of Legacy Management in planning the closure and long-term care of the FCP, including the development of this LMICP.

DOE continues to refine policy related to legacy management activities. DOE published *From Cleanup to Stewardship* (DOE 1999a) a document that provides background information on the DOE long-term stewardship obligations and activities [*From Cleanup to Stewardship* is a companion report to *Accelerating Cleanup: Paths to Closure* (DOE 1998a)]. *From*

Cleanup to Stewardship examines the transition from cleanup to long-term stewardship (now "legacy management"), and it includes brief site profiles covering the remediation and legacy management activities at various DOE sites.

A Report to Congress on Long Term Stewardship was issued in January 2001. The *Report to Congress* was required by the FY2000 NDAA to document existing and anticipated stewardship obligations. The report also summarizes stewardship efforts and planning across the DOE complex. Also included is a summary of stewardship planning and activities at numerous DOE facilities.

2.0 SITE BACKGROUND

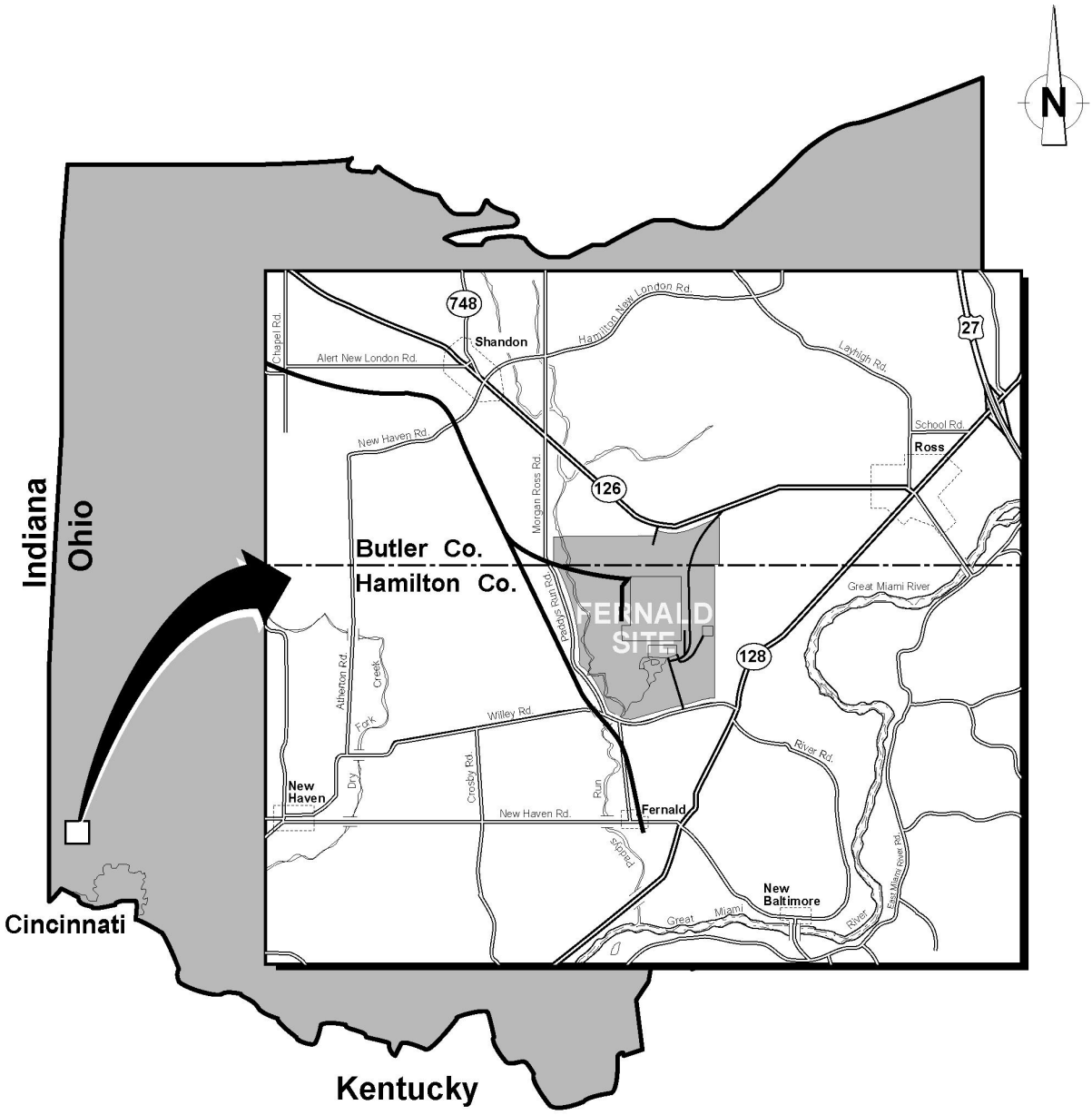
2.1 Site Description

2.1.1 FCP Site Description

The FCP is situated on a 1,050-acre tract of land, approximately 18 miles northwest of Cincinnati, Ohio. The FCP site is located near the unincorporated communities of Ross, Fernald, Shandon and New Haven (Figure 1). The former production area occupies approximately 136 acres in the center of the site. The waste pit area and the K-65 silos are located adjacent to the western edge of the production area. Paddys Run flows from north to south along the FCP's western boundary and empties into the Great Miami River approximately 1.5 miles south of the site. The FCP lies on a terrace that slopes gently between vegetated bedrock outcroppings to the north, southeast, and southwest. The site is situated on a layer of glacial overburden, consisting primarily of clay and silt with minor amounts of sand and gravel, that overlies the Great Miami Aquifer (GMA). Paddys Run and the storm sewer outfall ditch (SSOD), which empties into Paddys Run, have eroded the glacial overburden, exposing the sand and gravel that make up the GMA.

2.1.2 FCP Surrounding Area

In the vicinity of the FCP are the communities of Shandon (northwest), Ross (northeast), New Baltimore (southeast), Fernald (south), and New Haven (southwest) (Figure 1). Land use in the area consists primarily of residential use, farming and gravel excavation operations. Some land in the vicinity of the FCP is dedicated to housing development, light industry and park land. The Great Miami River is located to the east, and, like Paddys Run and the SSOD, has eroded away significant portions of the glacial overburden, exposing the sand and gravel that make up the GMA.



The Fernald site covers about 1,050 acres (425 hectares).

Figure 1 FCP and Vicinity

2.2 Site History

2.2.1 Feed Materials Production Center

The Feed Materials Production Center (FMPC) was the original name given to the Fernald site. The FMPC was constructed in the early 1950's by the Atomic Energy Commission (AEC) for the purpose of producing pure uranium metal from ores and process residues for use at other government facilities involved in the production of nuclear weapons for the nation's defense. A variety of materials were utilized throughout the production process, including ore concentrates and recycle materials which were dissolved in nitric acid to produce a uranyl nitrate hexahydrate (UNH) feed solution. The UNH was then concentrated and thermally denitrated to uranium trioxide (UO_3), or orange oxide. The orange oxide was either shipped to the gaseous diffusion plant in Paducah, Kentucky, or was converted to uranium tetrafluoride (UF_4), or green salt. The green salt was blended with magnesium-metal granules and placed in a closed reduction pot to produce a mass of uranium metal called a derby. Some derbies were shipped to other facilities but the remainder were melted and poured into pre-heated graphite molds to form ingots. Some ingots were rolled or extruded to form billets. Two reports that explain in greater detail the role of the Fernald site within the DOE complex and the processes that took place at the Fernald site are: *Historical Documentation of the Fernald Site and Its Role Within the U.S. Department of Energy Weapons Complex* (DOE 1998b) and *Historical Documentation of Facilities and Structures at the Fernald Site* (DOE 1998c).

Uranium metal was produced at the site from 1952 through 1989. During that time up to 1,000,000 pounds of uranium were released to the environment, resulting in contamination of soil, surface water, sediment, and groundwater on and around the site.

2.2.2 Change in Site Mission from Production to Remediation

In 1989, production ceased at the FMPC due to a decrease in the demand for the feed materials and an increase in environmental restoration efforts. The site was subsequently included on the U.S. Environmental Protection Agency's (EPA) National Priorities List. In 1991, the site was renamed the Fernald Environmental Management Project and the site was officially closed as a production facility. The DOE's management of the site switched from the Defense Programs division to the Environmental Restoration and Waste Management division. The National Lead Company of Ohio was the primary contractor to the AEC and DOE during production years. In 1986, Westinghouse was awarded management responsibilities of the facility. In 1992, the contract was awarded to the Fernald Environmental Restoration Management Corporation, now Fluor Fernald, Inc. The contract to complete the remediation of the facility through site completion was awarded to Fluor Fernald, Inc. in

November 2000. The current sitewide remediation effort is being conducted pursuant to CERCLA. Waste management is being conducted according to the Resource Conservation and Recovery Act (RCRA).

2.3 Remediation Process

2.3.1 Summary of Remediation Efforts

CERCLA is the primary driver for environmental remediation of the FCP. The site was divided into five operable units (OU) as follows:

- Operable Unit 1 – Waste Pits Area
- Operable Unit 2 – Other Waste Units
- Operable Unit 3 – Production Area
- Operable Unit 4 – Silos 1-4
- Operable Unit 5 – Environmental Media.

A Remedial Investigation and Feasibility Study (RI/FS) was conducted for each of the five operable units listed above. Based on the results of the RI/FS, records of decision (RODs) were issued outlining the selected remedy for each OU. A summary of the remedies follows.

The remedy for OU1 includes removing all material from the waste pits, stabilizing the material by drying, and shipping it off-site for disposal. The remedy for OU2 includes removing material from the various units, disposing of material that meets the on-site waste acceptance criteria (WAC) in the OSDF, and shipping all other material off-site for disposal. WAC were developed by DOE and regulators to strictly control the type of waste disposed on site. The OU3 remedy includes decontaminating and decommissioning all contaminated structures and buildings, recycling waste materials if possible, disposing of material that meets the on-site WAC in the OSDF, and shipping all other material off-site for disposal. The OU4 remedy includes removal and treatment of all material from the silos and shipping it off-site for disposal.

OU5 includes all environmental media, including soil, surface water, groundwater and vegetation. The Sitewide Excavation Plan (SEP, DOE 1998d) describes the remediation of soils. First, material exceeding the WAC for the OSDF will be dispositioned by one of the following: 1) transporting material to an off-site disposal facility for treatment and disposal; 2) treating material on site and transporting to an off-site disposal facility; or 3) treating material on-site and disposing of it in the OSDF. Details and exceptions for the above are outlined in the SEP.

Soil and sediment exceeding final remediation levels (FRLs), which are defined in the SEP, but are below the OSDF WAC will be excavated and placed in the OSDF. Soil certification processes will be performed

to ensure that excavation has removed all impacted material, as outlined in the SEP.

The OU5 ROD (DOE 1996) describes the approved remediation method of pump-and-treat for groundwater. The OU5 ROD also committed to continual evaluation of remediation technologies to allow for the improvement of the remedy with new technologies. As a result, an enhanced groundwater remedy, which could reduce groundwater remediation by ten years, was suggested and subsequently approved. The enhanced remedy includes additional extraction wells and the re-injection of treated groundwater to increase the rate at which contaminants move through the aquifer and are removed by the extraction wells.

The primary constituent of concern for groundwater is uranium. Other constituents have been identified and will be removed during the remediation of the uranium. A complete list of all of the constituents identified in groundwater can be found in the OU5 ROD. The final remediation level for uranium in groundwater is 30 parts per billion. DOE and regulators based the target cleanup levels for groundwater on use of the aquifer as a potable water supply and incorporated Safe Drinking Water Act standards for all constituents for which these standards were available.

Ecological restoration follows remediation and is the final step to completing cleanup of the site. Ecological restoration is being implemented in order to begin to facilitate settlement of a 1986 State of Ohio Claim against the Department of Energy (DOE) for injuries to natural resources at Fernald under CERCLA. Settlement of the claim is still in the negotiation stages. Restoration activities at the site are also being implemented to address wetland mitigation requirements under the Clean Water Act and to stabilize and revegetate areas impacted during remediation. The approach to ecological restoration of the FCP is outlined in the *Natural Resource Restoration Plan* (NRRP) (DOE 2002a). Compliance with the 2002 NRRP is a closure contract commitment for Fluor Fernald, Inc.

The goal for restoration of the FCP is to enhance, restore, and construct as feasible, given post excavation landforms and soils, the early stages of vegetative communities native to pre-settlement southwestern Ohio. Figure 2 illustrates the conceptual ecological restoration of the FCP. Restoration of the FCP involves four major components:

1. Expansion/enhancement of the riparian corridor along Paddys Run.
2. Expansion/enhancement of the wooded areas in the northern portion of the FCP.
3. Restoring a contiguous prairie in the central and eastern portions of the FCP (including the OSDF).
4. Creating open water areas and wetlands throughout the site as topography and hydrology allow.

The construction of public use amenities, such as trails and overlooks, has been discussed as part of the final land use at Fernald; however, no decision has been made regarding such amenities. The decision regarding the amenities is premature until settlement of the Natural Resource Injury claim at Fernald. It is recognized that there is stakeholder support for public use amenities as a result of the Future of Fernald Process and the Public Use discussions DOE held in the early part of 2002. Settlement negotiations are ongoing and this Plan will be revised to reflect the results of the Natural Resource Damage Assessment (NRDA) negotiations.

2.3.2 Schedule for Completion of Site Remediation

In January 2003, the site's name was changed to the Fernald Closure Project. DOE's closure contract with Fluor Fernald, Inc. outlines the remediation activities that must be completed by March 2006. Fluor Fernald, Inc. has also developed baseline plans and estimates for remedial activities based on the current contract. The initiation of legacy management is independent of any political or contractual definition of site closure or site completion.

FERNALD LEGACY MANAGEMENT
Future Use

LAND USE

- 395 acres of Woodlots
- 327 acres of Prairie
- 81 acres of Wetlands
- 60 acres of Open Water
- 75 acres of OSDF
- 33 acres of Savanna
- 30 acres of Development Area
- 49 acres of Infrastructure / Set Aside

Fluor Fernald

Graphic # 8131.4 6/04

2.4 Site Conditions at Closure

The following provides an overview of the site conditions after remediation as currently anticipated. It is clear that some remediation will be ongoing as legacy management is initiated. A more definitive description of site conditions at closure and completion will be included in a later version of this Plan.

2.4.1 On-Site Disposal Facility

Based on a Predesign Investigation, the most suitable location for the OSDF was determined to be on the eastern side of the FCP (Figure 2). The details of the investigation are in the *Predesign Investigation and Site Selection Report for the On-site Disposal Facility* (DOE, 1995a). This location was considered the best because of the thickness of the gray clay layer that overlies the GMA.

Construction on Cell 1 of the OSDF was initiated in December 1997 and the permanent cap for Cell 1 was complete in late 2001. When completed, the OSDF will consist of up to eight individual cells covered by a continuous permanent cap. The final dimensions will be approximately 800 feet east to west, 4300 feet north to south, with a maximum height of 65 feet. A later version of this Plan will include design drawings of the OSDF and the final Plan will include as-built drawings. An anticipated 2.5 million cubic yards of impacted materials will be placed in the facility. It is expected that approximately 80 percent of the material will be impacted soil and the remaining 20 percent will consist of building demolition rubble, fly ash, lime sludge, and small amounts of miscellaneous materials. The Post Closure Care and Inspection Plan (PCCIP, Attachment B) provides a summary of the materials permitted to be placed in the OSDF. The volumes mentioned above are subject to change during the actual remediation process.

The design approach for the OSDF can be found in both the OU2 ROD (DOE 1995b) and the *Final Design Calculation Package, On-site Disposal Facility* (Geo-Syntec1997). The design includes a liner system, impacted material placement, final cover system, leachate management system, surface water management system, and other ancillary features.

A buffer area and perimeter fence will be established around the disposal facility (total area of approximately 123 acres). Institutional controls are outlined in the PCCIP, OU2 ROD and OU5 ROD and are described in further detail in the IC Plan (Volume 2 of this document).

2.4.2 Restored Areas

Approximately 904 acres of the FCP property will be ecologically restored. Restored areas are those areas of the site that have been graded following remedial excavation, amended, planted and/or enhanced to create the early stages of ecosystems comparable to

native pre-settlement southwestern Ohio. The specific habitats to be restored include upland forest, riparian forest, tallgrass prairie/savanna, and wetlands/open water (Figure 2). In addition, existing habitats (such as the pine plantations) will undergo enhancements. Following are brief summaries of the planned habitat restorations. Details of the actual projects to be completed and further details on the restored areas are described in the Final NRRP (DOE 2002).

Upland Forest: Upland forest areas exist in a northern portion, a southern portion and the western perimeter of the site. Restoration activities will be conducted to expand these forested areas. The *Sitewide Characterization Report* (DOE 1993) describes the FCP as existing in a transition zone between the Oak-Hickory and Beech-Maple sections of the Eastern Deciduous Forest province. That is, a mosaic of both Oak-Hickory and Beech-Maple forest types can be found in southwest Ohio. Forest communities at the FCP would gradually move toward one of these forest types, depending on site-specific factors such as topography and hydrology. Therefore, restoration of upland forests at the FCP will focus on the establishment of this Beech-Maple, Oak-Hickory transition zone. The trees that will be used are native to southwestern Ohio and are listed in the NRRP, Table 3-1.

Riparian Forest: Riparian corridors exist along Paddys Run and the SSOD. Restoration activities will be conducted to expand these corridors through revegetation. The trees species selected are those that can withstand periodic inundation and are listed in the NRRP. The Paddys Run floodplain will be expanded as part of the long-term management plan for Paddys Run.

Tallgrass Prairie/Savanna: The current waste-pit, production, OSDF, and borrow (east field) areas will become a contiguous prairie. Some prairie/savanna will be established along the western perimeter of the site but concentration will be primarily in formerly disturbed areas. Prairie restoration will involve amending soil, if necessary, seeding of grasses and forbs ("wildflowers"). All grasses and forbs will be native to the area.

Savannas will be established by planting a sparse mix of trees and shrubs, and seeding the area with native grasses.

Wetlands/Open water: Wetlands and open water areas will be established throughout the site where topography permits. The former production area will have open water areas as a result of deep excavations, and wetlands will be established throughout the site. DOE is responsible for providing 17.8 acres of mitigated wetlands under Section 404 of the *Clean Water Act*. In addition to mitigating wetlands, upland and riparian forest re-vegetation in various areas

could be designed to restore wet woods. Details and drivers for wetland mitigation are described in the NRRP.

2.4.3 Groundwater

Operation of some portions of the groundwater extraction system will continue into legacy management. Groundwater remediation and monitoring will continue until the FRL of 30 ppb for uranium has been achieved. Groundwater monitoring will be required following completion of remediation to ensure continued protectiveness of the remedy and to support the CERCLA five-year reviews. The exact frequency and approach to monitoring to support the five-year reviews has not been specifically determined at this time. The Operations and Maintenance Master Plan (OMMP, DOE 2004a) is included as Attachment A to the LMICP and describes the groundwater extraction system used to complete the remedy. Further detail is included in Section 3.1.3 of the IC Plan. Long term monitoring of groundwater will be required around the OSDF. The exact approach to groundwater monitoring will be further defined with input from stakeholders and the regulators prior to the implementation of legacy management.

2.4.4 Existing Infrastructure and Facilities

A few facilities will remain on site following remediation. These include the Converted Advanced Wastewater Treatment Facility (CAWWT) and supporting infrastructure, extraction wells and associated piping and utilities, the outfall line to the Great Miami River, and a few office trailers. The majority of the current AWWT will undergo D&D and the remaining portion will be converted to a smaller wastewater treatment facility (converted advanced waste water treatment facility (CAWWT)) to support continued groundwater remediation at the FCP, following closure.

Twenty-three acres of the DOE property have been identified for potential community use. The area has been certified; however, no additional ecological restoration in this area will be completed until a decision is made on future use.

3.0 SCOPE OF LEGACY MANAGEMENT AT THE FCP

Post-closure requirements will include maintaining the remedy, ensuring the protectiveness of human health and the environment. Other post-closure activities will include monitoring and maintaining the FCP property, facilities, and structures that remain following completion of site remediation. Post-closure requirements at the FCP will be the responsibility of the Office of Legacy Management. Within the Office of Legacy Management, the LM-50 organization will be responsible for ongoing surveillance and maintenance at the FCP and the continuation of the groundwater remedy.

The commitments in the RODs relevant to legacy management include the following:

- DOE will achieve the final remediation levels (FRLs) for all contamination attributed to the FCP. Site-wide cleanup levels for soil are documented in the OU2 ROD, and in the OU5 ROD based on a recreational use and the undeveloped park (i.e., greenspace) scenario. The FRLs, once achieved, will not allow unrestricted use of the FCP and ICs will be required.
- Per the OU2 ROD, the FCP will remain under federal ownership. Therefore, any final land use alternative and legacy management planning has to include DOE's commitment to continued federal ownership.
- Commitments for other environmental monitoring will be carried out for as long as appropriate per the existing RODs.

Maintaining ICs at the FCP will be a fundamental component of legacy management and will include ensuring no residential or agricultural uses occur on the property. The intent of this Legacy Management Plan is to provide an overview of ICs required for the FCP to support legacy management. A separate Institutional Controls Plan (IC Plan) is required for the FCP per the DOE's commitment to U.S. EPA in the OU 5 ROD. The IC Plan is included as Volume 2 of this comprehensive LMICP. DOE and USEPA guidance were used to identify planned ICs at the FCP. The IC Plan will continue to be updated as needed based on changing site conditions and input from stakeholders and regulators. Section 4.2 discusses the five-year review process and how it relates to legacy management, including ICs.

Postings along the perimeter of the FCP will indicate the restrictions on activities on the FCP property and who to call for information. Fencing and postings will delineate the OSDF restricted area. Some legacy management activities will consist of enforcing the land uses, maintaining fences (as needed), and periodically replacing signs. The information on the history and remediation of the site, which is necessary for legacy management purposes will be maintained by the Office of Legacy Management at a central federal government location. It is anticipated that copies of key documents (Table 6-1) will also be maintained at a location at or near the Fernald site.

The scope of legacy management activities at the FCP fall into two categories: 1) operation and maintenance of the remedy and 2) legacy management in restored

areas. Legacy management activities related to the maintenance of the remedies will include monitoring and maintenance of the OSDF, ensuring that remedy-driven restrictions on access and use of the FCP are enforced, and information management. Following closure of the OSDF, monitoring becomes a legacy management responsibility.

Legacy management in restored areas will include ensuring that natural and cultural resources will be protected in accordance with applicable laws and regulations. Construction of any public use amenities, such as trails, overlooks, etc., has not yet been decided. The decision regarding the amenities is premature until settlement of the Natural Resource Injury claim that is currently being negotiated. The cleanup levels established for the FCP will ensure the site is remediated to a level consistent with recreational use. If constructed, monitoring and maintenance of those amenities would be necessary to ensure they remain safe for use. Stewardship of public use amenities is not within DOE's responsibilities and has not been determined. A similar scenario applies to the potential multi-use educational facility. The construction of such a facility is not an Office of Legacy Management responsibility, and if such a facility is constructed, funding for the management and maintenance of the facility would have to be identified.

The potential reburial of Native American remains is another on-going initiative that is currently outside the scope of this Plan. DOE has agreed to make land available for the re-interment of Native American remains. Responsibility for managing the re-interment process and ongoing care and maintenance of areas dedicated for this use will not fall under the Office of Legacy Management requirements.

3.1 Legacy Management of the OSDF

The OU 2 ROD states that the FCP will remain under federal ownership. DOE has committed to the goal of ensuring legacy management activities of the OSDF in perpetuity. The PCCIP (Attachment B) for the OSDF outlines the routine legacy management activities for the initial 30-year period. The activities include routine inspections and ongoing monitoring of the leachate collection system, leak detection system, and groundwater in the vicinity of the OSDF. DOE will conduct CERCLA reviews every five years and will issue a report summarizing the results of the review to the appropriate regulatory agencies. Periodic monitoring and maintenance of the leachate collection system and vegetative cap of the OSDF will be necessary, as well as occasional maintenance of signs, fencing, and the buffer zone around the OSDF. Further detail regarding the inspections and monitoring are included in the IC Plan.

Remote monitoring of the OSDF has been initiated on Cell 1 of the OSDF. The remote systems installed on Cell 1 include sensor technology to monitor groundwater and rainwater intrusion, subsidence, integrity of the leachate collection system and the cap, and real-time characterization and tracking of leachate and groundwater flow. A final decision on whether to continue to monitor the cell 1 cap using the automated monitors and whether to install the remote monitoring devices on the remainder of the OSDF has not been made to date. Information collected from the sensors on Cell 1 (and the

remainder of the OSDF if installed) will be managed with other data required for legacy management. Background information regarding the OSDF design, monitoring technologies, and various data being collected will be available on-line.

The extent of legacy management activities will be defined based on regulatory requirements, stakeholder and regulatory input, and agreements between DOE and the Ohio and U.S. EPAs. Details of the maintenance and monitoring requirements for the leachate system, the capping/cover system and the support systems for the OSDF are included in the IC Plan and supporting documents.

3.2 Surveillance and Maintenance of Restored Areas

Per the OU5 ROD, DOE will protect the existing natural resources at the FCP. Monitoring will focus on ensuring the natural resources are protected in conjunction with appropriate laws and regulations. Wetlands and threatened and endangered species are examples of natural resources that will be monitored. Existing cultural resource areas will also have to be inspected to ensure the integrity of these areas is not threatened.

Any amenities that may be constructed to support public use of the FCP would need to be funded through the Office of Legacy Management. Funding sources for the legacy management of the public use amenities would need to be identified. Legacy management activities would be necessary to maintain roads, parking lots and trails (if any) in a safe configuration. Signs/displays/markers will require maintenance to ensure their integrity and legibility.

Monitoring and maintenance of restored areas will be required to ensure that applicable laws and regulations are followed, such as the Clean Water Act and the Endangered Species Act.

Restored areas will be inspected to ensure that protected natural resources (e.g., wetland, threatened and endangered species) are maintained in conjunction with applicable laws and regulations. Physical disturbance of restored areas will not be permitted unless authorized by the site steward (Office of Legacy Management). Soil and vegetation will not be removed from the FCP unless authorized by the steward. Inspections of restored areas will also occur in the spring and late summer for the presence of any species classified as noxious weeds in Ohio as defined by Ohio Administrative Code.

Inspections will include the site's drainage channels. Excessive erosion problems along Paddys Run or other site drainage channels that pose a threat to site infrastructure will be corrected.

Existing cultural resource areas will be a part of the undeveloped park and will require inspections to ensure their preservation, and to determine if there are any impacts to the resources caused by natural forces, vandalism, or

looting. Actions will be implemented if there is evidence that the integrity of a site is threatened due to natural or human forces. Although DOE has agreed to make land available for the re-interment of Native American remains, thus creating a cultural resource area, the maintenance of that area would not fall under DOE legacy management requirements.

4.0 OVERSIGHT OF LEGACY MANAGEMENT AT FERNALD

4.1 Legacy Management Office Responsibilities

The Office of Legacy Management is responsible for oversight of the FCP during legacy management. They will ensure that all legacy management activities are conducted as required. They will be the decision making body regarding changes in inspections and monitoring, any engineering changes required, any changes in access or public use, etc.

4.2 Role of Site Contractor

A site contractor will support the Office of Legacy Management and will be the physical presence at the site. Contractor personnel will be responsible for operating the groundwater remediation systems, conducting inspections, monitoring, and sampling. They will collect all data, develop the reports, and make those reports available to the public and stakeholders. Maintenance activities for the OSDF will be their responsibility as well. The contractor will notify the Office of Legacy Management in the event of an emergency and will take action to prevent damage to the site.

4.3 Role of Regulators

The requirements outlined in the IC Plan will be enforced by the U.S. EPA. Both U.S. EPA and Ohio EPA will be provided with all reporting on the legacy management activities at the FCP. Both U.S. EPA and Ohio EPA will also be notified of any IC breaches as outlined in Section 4.0 of the IC Plan. Both agencies will be involved in oversight of legacy management activities at the FCP.

4.4 Reporting Requirements

Specific requirements for reporting, other than the CERCLA five-year reviews, have not yet been established. However, some type of reporting to the regulators, stakeholders and the public will be conducted at a minimum on an annual basis. This section will be updated in a future revision to this LMICP to reflect additional reporting requirements, other than the CERCLA five-year review, that may be agreed upon.

Reports will be generated for various reasons. Monitoring, inspections, and sampling will be conducted on a regular basis on the OSDF, the restored areas of the site, and the groundwater remediation process. Required inspections are listed and defined in the IC Plan (Volume 2 of this document). The data gathered will be put into a report to the regulators, Office of Legacy Management, stakeholders and the public. Additional reporting information is included in Section 5.3 of the IC Plan.

4.5 CERCLA Five-year Reviews

Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), a review of the remedy at the FCP is required every five years. The CERCLA five-year reviews will focus on the protectiveness of the remedies associated with each of the five OUs. To facilitate the review, a report addressing the ongoing protectiveness of the remedy will be

prepared and will be submitted to the EPA. The IC portion of the report will include the data collected from monitoring and sampling, summaries of the inspections conducted of the FCP site and OSDF site and cap during the five-year period, and a discussion on the effectiveness of the ICs. If it is determined that a particular control is not meeting its objectives then required corrective actions will be included. The review may lead to revisions to the monitoring and reporting protocols.

5.0 PUBLIC PARTICIPATION

The public has played a very important role in the remediation process at the FCP and stakeholders remain very involved in the remediation and planning for legacy management. Various stakeholder groups meet on a regular basis with FCP employees to be updated on the latest activities at the site. DOE also holds regularly scheduled meetings with these groups and the general public to share current site information (progress updates). During the next several years, key decisions will be made with regard to legacy management planning at the FCP. The public and other stakeholders will remain involved in legacy management planning activities and will continue to play an active role in helping DOE make critical legacy management decisions.

5.1 Public Involvement via Groups and Organizations

Several groups follow the remediation and cleanup process at the FCP, including the FCAB, FRESH and the Fernald Living History Project. The FCAB was formed to formulate cleanup policy and to help guide the cleanup activities at the site. Representatives, including local residents, governments, businesses, universities, and labor organizations, comprise the advisory board membership. In 1995, the FCAB issued recommendations to DOE on remedial action priorities, cleanup levels, waste disposition alternatives, and future uses for the FCP property. The FCAB continues to be actively involved in the remediation and restoration activities for the FCP with monthly full board meetings and meetings of the FCAB Stewardship Committee.

To date, the FCAB co-sponsored, along with FRESH, the Community Reuse Organization and the Fernald Living History Project, four "Future of Fernald" workshops. The workshops were open to the general public and gave stakeholders the opportunity to provide input on the final public use decisions as described in the Master Plan for Public Use of the FCP (DOE 2002b). The later workshops led to the recommendation for a Multi-Use Education Facility at the site, as discussed later in Section 6.3.

The FCAB has also worked with the Natural Resource Trustees and DOE to assist in the development of the legacy management Plan. As mentioned in previous sections, the future use and amenities at the site are directly tied to the degree of legacy management that will be necessary. DOE will work closely with the FCAB to promote discussion with the general public regarding future use and legacy management of the FCP.

FRESH was formed by local residents in 1984 and has played an important role in providing community input on the characterization and remediation of the Fernald site.

A list of other stakeholders considered to be critical for legacy management planning at the FCP is given below. Additional stakeholders may be identified in the future.

- Local government and enforcement agencies
- Local volunteer organizations
- Local residents
- Universities
- Local school groups
- Environmental organizations
- Native American Tribes
- Native American organizations
- NRTs – Natural Resource Trustees
- Regulatory Agencies
- Fernald Living History, Inc.
- Crosby Township Historical Society
- Local businesses.

5.2 Legacy Management Planning Decisions and Public Reviews

Several decisions have been and will be required by DOE to facilitate successful legacy management planning at the FCP. A summary of those decisions and anticipated timing of public input are:

- A Legacy Management Plan to provide a framework for stewardship planning at the FCP. The plan was made available for stakeholder review in December of 2002 and formally submitted to DOE Headquarters, U.S. EPA and Ohio EPA in January 2003. A revised Legacy Management Plan will be re-submitted to U.S. EPA and Ohio EPA in July 2004.

The following decisions will receive on-going consideration during the legacy management planning process as appropriate.

- Decisions on future stewards, as appropriate, to work with the Office of Legacy Management for the restored/public use portions of the FCP. A team approach to legacy management of restored areas may be appropriate. Any discussion of additional stewards for the FCP beyond the Office of Legacy Management will be shared with the public before any final decision is made. At that time a local point of contact for the Fernald site will be established.
- A list of records and associated electronic data determined critical for legacy management to support post-closure maintenance purposes. The public will continue to have input regarding records and data that pertain to legacy management. All documents, when finalized, will be available for public review upon closure.
- Establishment of guidance policies for electronic records as well as requirements for integration with any planned or proposed centralized electronic data and/or records repositories.

- A decision on the regulatory requirements that will drive legacy management activities at the FCP. The database developed by Florida International University (FIU 2002) is a starting point in the identification of applicable requirements, but considerable review and decision-making is still required.
- A final decision on the location for and the establishment of procedures for the reinterment of Native American remains.
- A decision on the extent of, if any, public use amenities to be constructed on site.
- A decision on the location of a local records repository.
- Decisions on recommended actions by the FCAB through the Future of Fernald process including development of a public information system that meets stakeholder needs and the feasibility of a Multi-Use Educational Facility at the FCP (FCAB 2002).

Input on future legacy management planning decisions will occur through formal document reviews, community meetings, roundtables, workshops, and other forums. Currently, DOE holds quarterly cleanup progress briefings for interested stakeholders. DOE anticipates continuing these updates throughout remediation and legacy management planning.

Another process involving the public is the CERCLA five-year review. Under CERCLA, a review of the remedy at the FCP is required every five years. The CERCLA five-year reviews will focus on the protectiveness of the remedies associated with each of the five OUs. Following the review, a report will be submitted to the Environmental Protection Agency. The report will present the data collected and descriptions of activities performed at the site during a five-year period. To ensure the information is readily available, all data and documentation will need to be maintained at the site.

Integration between legacy management and five-year review activities will occur as follows:

- Five-year review will include a review of legacy management activities (e.g., institutional controls, monitoring results);
- Information and records compiled and summarized for legacy management purposes will be available and used to support the five-year reviews; and
- All information developed for five-year reviews will be incorporated into the information and records maintained for legacy management purposes.

6.0 INFORMATION MANAGEMENT

The retention of records and dissemination of information over the long-term is another critical aspect of legacy management. Records which are needed for legacy management purposes will be managed by the Office of Legacy Management as the steward of the FCP (DOE, 2002d). Any centralized system to provide stakeholders with access to records or copies of records will be managed by the Office of Legacy Management. Copies of selected records documenting past remedial activities (e.g., soil certification) and the design and contents of the OSDF will be retained for legacy management purposes on or near the site and by the Office of Legacy Management. In addition, newly acquired records related to remedy performance must be readily available to stakeholders. Original records will be dispositioned in accordance with DOE requirements at the National Archives Records Administration (NARA) or a Federal Records Center for their required retention period or destroyed once they have reached the required retention.

As a fundamental component of legacy management, a system will be established to provide stakeholders with access to information needed during legacy management. Prior to the implementation of legacy management at the FCP, DOE will generate an inventory of records that outlines the categories of data determined critical for legacy management purposes. The records inventory will be clearly written in language that will allow future generations, unfamiliar with the site, to identify the type of information desired. A clearly written summary narrative is anticipated to be a better tool for future access to records than a comprehensive index. Included with the description of each category would be references to the specific documents that fall into the desired category, summaries of the documents, and instructions on how those documents (or copies of the documents) can be accessed. It is envisioned that the narrative will be made available to stakeholders in both hard copy and in electronic form.

Stewards and stakeholders, whether located in the surrounding community or in remote locations, will require easy access to copies of records, data, and to a lesser extent, digital images collected as part of the long term monitoring process as well as to the identified historical data and records. The Stewardship Committee of the Fernald Citizens Advisory Board conducted research, interfaced with stakeholders and provided formal recommendations to DOE (FCAB, 2002) explaining why public access to information is critical at sites like Fernald. The report presents the specific information needs of the Fernald community and offers suggestions on how DOE can meet those needs.

With regard to electronic data and information, all data and information required to support legacy management will be identified and transferred to the Office of Legacy Management. The Office of Legacy Management will make the data and information available to the public through a variation of the existing "GEMS" computer system, currently in use at the Office of Legacy Management, at www.lm.doe.gov to track legacy management progress at sites like Weldon Springs. DOE-FCP will work with the Office of Legacy Management to transition data and information needed to support legacy management into the appropriate system as identified by the Office of Legacy Management. It is anticipated that the system to support legacy management will address the following:

- On-site data transmission, telecommunications and computing resources requirements.
- Data acquisition standards and protocols for newly collected data as well as for historical data and images to be migrated to the repository.
- Analysis tools, integration with other data sources and notification services to assist remotely located stewards.
- Electronic data storage requirements.
- Data management and validation practices sufficient to ensure defensible information.
- Plans for periodic storage infrastructure reviews and upgrades to ensure electronic information is continually available as technology advances.
- Integration with any DOE or federally mandated central repository for electronic records or data, as appropriate.
- Web based retrieval, search and reporting capabilities.

Examples of electronic data include environmental sampling and monitoring data, OSDF monitoring data, and soil certification data as well as electronic images, design drawings, and electronic records. This information is required for the purposes of generating required reports, including the CERCLA five-year review, for efficient management of the data collection process, and for public use.

It is envisioned that the data repository and associated support personnel could be located off-site, at a DOE (or contractor) location. It is anticipated that an on-site location could house computing facilities for acquisition and access. Final decisions regarding the structure and content of the data repository will be made by DOE with input from the stakeholders.

6.1 Types of Data Required for Stewardship Purposes

Data determined critical for legacy management purposes have been divided into four categories: historical data, RI/FS process and results, remediation data, and post site closure data. Table 6-1 presents the types of information that fall into each category.

Based on the four categories DOE-FCP and Fluor Fernald have initiated the process of working with stakeholders to identify any records considered critical for legacy management. Interface with stakeholder groups was initiated in the fall of 2002 and will continue through 2004 to ensure that the appropriate types of information and records are being retained to support legacy management. Formal recommendations from the FCAB (FCAB 2002) and ongoing interface with stakeholders will allow DOE to retain the appropriate information to support future legacy management needs.

6.2 Stewardship Records Custodian

Site records that fall under the DOE retention schedule will remain in the custody of the DOE for the required, pre-established retention period. The Office of Legacy Management is the lead and may be the records custodian responsible for records management at closed sites, including Fernald (DOE 2002b). Once the retention period for a document has expired, that document is to be destroyed. However, under 36 CFR Part 1228 Subpart D, Temporary Extension of Retention Periods, a request may be submitted by DOE to delay the destruction of a document that has reached the end of its retention period. This request will be submitted for a document only if it is determined that the original document is critical for legacy management purposes and must be retained. Custody of the records inventory will also become the responsibility of the Office of Legacy Management. A copy of legacy management records will be located on or near the site (Table 6-1).

6.3 Records Storage Location

DOE will maintain necessary historic and remediation records. As stated above, copies of these records will be housed on or near the site. The stakeholders strongly recommend that records be maintained on site and have suggested that a facility for groundwater and environmental education purposes be constructed on site as part of a settlement with the State of Ohio; however, other options will be considered. At a minimum, a utilitarian type structure can be located on the FCP to house records needed during legacy management. The records summary narrative will also be housed with the copies of these historic records.

From the comprehensive list of records determined critical for legacy management, a second list of records will be developed. The records in this second list will be copies of records, which will be stored on or near the site under the responsibility of the site steward. While the electronic data repository will be physically located in a remote computing location, local access to the data via a proposed web page is being considered.

The Office of Legacy Management will also manage copies of records that are necessary to perform environmental legacy management activities and functions. Federal Records Centers will be used for the storage of post-closure records. Fernald records may be housed at the Federal Records Center in Dayton, Ohio where some FCP site records are currently housed.

6.4 Public Access Requirements

Documents will be made available to the public. Copies of some documents, especially those generated after site completion (e.g., monitoring and maintenance records) will be easily accessible as a result of their proximity on or near the site. For other documents, a formal request process, (Freedom of Information Act) will be required to obtain a copy.

TABLE 6-1
TYPES OF DATA NEEDED TO SUPPORT FUTURE LEGACY MANAGEMENT ACTIVITIES

DATA CATEGORY	SUMMARY OF INFORMATION REQUIRED
Historical Data	• Real estate records • Information pertaining to acquisition of property • Process documents/reports (summary level) • Cultural Resource records • Photographs (significant for legacy management purposes)
RI/FS Process and Results	• Risk assessments • Public comments • RI/FS reports for each OU • Records of Decision for each OU
Remediation Data	**For soil:** • Design and excavation plans • Documentation of certification process for each area/phase • Certification reports* **For groundwater:** • Pump and treat system design documents • Groundwater monitoring data **For Integrated Environmental Monitoring Plan:** • IEMP reports* • Regular updates* **For buildings and structures:** • Plans for decommissioning and dismantling buildings and structures **For OSDF:** • Design, construction, material placement and closure documentation • Leak detection/leachate monitoring data • Cover/cap monitoring data **For Restoration:** • Design plans • Implementation documentation • Monitoring data*
Post Closure Data	• Decision documents on land use • Documents on public use decision • All monitoring and maintenance data for the OSDF • All monitoring and maintenance data for the restored areas* • All institutional control data

***** Will require retention of electronic data

7.0 FUNDING

A preliminary estimate of legacy management costs has been developed and is provided in Appendix A. The estimate assumes the Office of Legacy Management will contract and oversee the maintenance and monitoring work that is required at the FCP. These cost estimates will continue to be refined as legacy management plans are finalized. The attached cost estimate provides total legacy management costs over a 30-year period and will be used as the basis for future budget planning for legacy management at the FCP.

In general, the current cost estimate for legacy management activities covers the technical support, monitoring, and maintenance of the Fernald site to ensure compliance with all applicable federal and state requirements for the next 30 years. The current cost estimate does not include the cost of Federal employees at DOE-legacy management or other government offices required for managing legacy management of the FCP. The estimate does include costs for all support activities, including overall project management, accounting, legal, contracts management, health and safety, security, records management and quality assurance. Specifically, the legacy management costs include:

- Monitoring, sampling and analysis, and reporting (as required per regulations, RODS, or other agreements for the FCP) on the leachate removal process, the OSDF, and the balance of the FCP remediated site;
- Leachate removal/treatment, including all work involved in collecting, removing, and treating OSDF leachate;
- OSDF and "greenfield" maintenance costs, including all personnel, equipment, space, and subcontracts required to maintain the integrity of the OSDF and natural aesthetics of the site;
- Continuing groundwater remediation and all associated activities on-going post-closure;
- Record keeping and development and operation of a data repository; and
- Contractor support costs, leases and utilities.

Funding for legacy management will need to be secured by DOE in future budget requests for the years after site closure. Currently, it is anticipated that Office of Legacy Management funds will be available for OSDF monitoring, maintenance and leachate management post-site remediation, and for ensuring that applicable laws and regulations are adhered to in restored areas post-site remediation. The preliminary estimate included as Appendix A also includes the continuing groundwater remediation that will be ongoing post-closure. The next version of this LMICP will include an updated estimate. DOE will keep the public informed of the Department's plans to fund legacy management activities as new information becomes available.

Currently, legacy management activities at the various DOE facilities are funded through the annual appropriations process. Funding for sites in the long-term surveillance and maintenance program is maintained in a separate line item in the Office of Legacy Management budget. For the time being, this process for funding legacy management will continue; however the DOE will continue to investigate other funding and management options.

REFERENCES

FIU, 2002, "2006 and Beyond: Defining Long-Term Stewardship Requirements at Fernald." November 2002. Florida International University, Miami, Florida.

FCAB, 2002, "Telling the Story of Fernald – Community Based Stewardship and Public Access to Information." October 2002. The Perspectives Group, Alexandria, Virginia.

Geo-Syntec, 1997, "Final Design Calculation Package, On-site Disposal Facility," Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

ICF Kaiser Consulting Group, 1998, "Managing Data for Long-Term Stewardship", Draft.

U.S. Department of Energy, 1993, "Sitewide Characterization Report", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1995a, "Predesign Investigation and Site Selection Report for the On-site Disposal Facility", Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1995b, "Record of Decision for Remedial Action at Operable Unit 2", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio

U.S. Department of Energy, 1996, "Record of Decision for Remedial Action at Operable Unit 5", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998a, "Accelerating Paths to Cleanup", DOE, Office of Environmental Management.

U.S. Department of Energy, 1998b, "Historical Documentation of the Fernald Site and Its Role within the U.S. Department of Energy's Weapon Complex", Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998c, "Historical Documentation of Facilities and Structures at the Fernald Site", Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998d, "Sitewide Excavation Plan", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1999a, "From Cleanup to Stewardship", DOE, Office of Environmental Management.

U.S. Department of Energy, 1999b, "The Long-Term control of Property: Overview of Requirements in Orders DOE 5400.1 & DOE 5400.5", DOE, Office of Environmental Policy and Guidance.

REFERENCES
(Continued)

U.S. Department of Energy, 2000a, "Long-Term Stewardship Study", Office of Long-Term Stewardship, DOE, Office of Environmental Management.

U.S. Department of Energy, 2000b, "Long Term Stewardship 'Guiding Principles'", DOE, Ohio Field Office, Miamisburg, Ohio.

U.S. Department of Energy, 2000c, "Selecting and Implementing Institutional controls in RCRA and CERCLA Response Actions at Department of Energy Facilities", DOE, Office of Environmental Policy and Guidance.

U.S. Department of Energy, 2001, "A Report to Congress on Long-Term Stewardship", Office of Long-Term Stewardship, DOE, Office of Environmental Management.

U.S. Department of Energy, 2002a, "Natural Resources Restoration Plan", Draft Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2002b, "Master Plan for Public Use of the Fernald Environmental Management Project", DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2002c, "Interim Policy and Actions regarding Records Management for Closure Sites", Office of Long-Term Stewardship, DOE, Office of Environmental Management.

U.S. Department of Energy, 2003, "Integrated Environmental Monitoring Plan", Revision 3, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004a, "Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project", DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004b, "Post-Closure Care and Inspection Plan On-Site Disposal Facility", Revision 1, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004c, "Groundwater/Leak Detection and Leachate Monitoring Plan", Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio

Appendix A

Legacy Management Cost Estimates

Long-Term Stewardship Cost Estimate Summary (In thousands of dollars, unescalated)

Year	Surveillance & Maintenance	OSDF O&M	CAWWT Ops.	Well field Ops.	GW Monitoring	CAWWT D&D	GW D&D	Total
2007	$565	$300	$3,300	$1,800	$1,700			$7,665
2008	$565	$300	$2,200	$1,800	$1,700			$6,565
2009	$565	$300	$2,200	$1,800	$1,700			$6,565
2010	$565	$300	$2,200	$1,800	$1,700			$6,565
2011	$565	$300	$2,200	$1,800	$1,700			$6,565
2012	$565	$300		$1,800	$1,700	$1,950		$6,315
2013	$565	$300		$1,800	$1,700	$1,950		$6,315
2014	$565	$300		$1,800	$1,700			$4,365
2015	$565	$300		$1,800	$1,700			$4,365
2016	$565	$300		$1,800	$1,700			$4,365
2017	$565	$300		$1,800	$1,700			$4,365
2018	$565	$300		$1,800	$1,700			$4,365
2018	$565	$300		$1,800	$1,700			$4,365
2019	$565	$300		$1,800	$1,700			$4,365
2020	$565	$300		$1,800	$1,700			$4,365
2021	$565	$300		$1,800	$1,700			$4,365
2022	$565	$300		$1,800	$1,700			$4,365
2023	$565	$300		$1,800	$1,700			$4,365
2024	$565	$300		$1,800	$1,700			$4,365
2025	$565	$300		$1,800	$1,700			$4,365
2026	$565	$300		$1,800	$1,700			$4,365
2027	$565	$300					$600	$1,465
2028	$565	$300					$600	$1,465
2029	$565	$300						$865
2030	$565	$300						$865
2031	$565	$300						$865
2032	$565	$300						$865
2033	$565	$300						$865
2034	$565	$300						$865
2035	$565	$300						$865
2036	$565	$300						$865
Total	**$16,950**	**$9,000**	**$12,100**	**$36,000**	**$34,000**	**$3,900**	**$1,200**	**$113,150**